

CLAIMS

We claim

1. A plant that is genetically modified to include at least one gene encoding an enzyme from a vitamin C biosynthetic pathway, wherein said pathway includes a *myo*-inositol oxygenase enzyme.
2. The plant of claim 1, wherein said plant includes more than one copy of said gene.
3. The plant of claim 1, wherein said plant further includes a means to enhance transcription of said gene or genes.
4. The plant of claim 1, wherein said plant is selected from the group consisting of lettuce, tobacco, and *Arabidopsis*.
5. The plant of claim 1, wherein said plant is a tobacco plant.
6. The plant of claim 1, wherein said at least one gene encodes a *myo*-inositol oxygenase enzyme.
7. A method of increasing an endogenous level of vitamin C in a plant, comprising the step of
genetically modifying said plant to contain at least one gene encoding an enzyme from a vitamin C biosynthetic pathway, wherein said pathway includes a *myo*-inositol oxygenase enzyme, and wherein said step of genetically modifying said plant results in increasing the intrinsic level of vitamin C in said plant.
8. The method of claim 7, wherein said plant contains more than one copy of said gene.

9. The method of claim 7, wherein said plant further includes a means to enhance transcription of said gene or genes.
10. The method of claim 7, wherein said plant is selected from the group consisting of lettuce, tobacco, and *Arabidopsis*.
11. The method of claim 7, wherein said plant is a tobacco plant.
12. The method of claim 7, wherein said at least one gene encodes a *myo*-inositol oxygenase enzyme.
13. A method for reducing TSNAs in air cured tobacco, comprising the step of genetically engineering said tobacco to include at least one gene in a vitamin C biosynthetic pathway, wherein said step of genetically engineering said tobacco results in reduced levels of TSNAs in said tobacco.
14. The plant of claim 13, wherein said tobacco includes more than one copy of said gene.
15. The plant of claim 13, wherein said tobacco further includes a means to enhance transcription of said gene or genes.
16. The method of claim 13, wherein said pathway includes a *myo*-inositol oxygenase enzyme.
17. The method of claim 13, wherein said pathway includes a L-gulono-*gamma*-lactone oxidase enzyme.
18. The method of claim 13, wherein said at least one gene is rodent L-gulono-*gamma*-lactone oxidase enzyme.

19. The method of claim 13, wherein said at least one gene encodes a *myo*-inositol oxygenase enzyme.
20. The method of claim 13, wherein said step of genetically engineering said tobacco results in an increase in an endogenous level of vitamin C in said tobacco.
21. A tobacco plant that produces elevated levels of vitamin C.
22. The tobacco plant of claim 21 wherein said plant is produced by genetic engineering.
23. The tobacco plant of claim 21 wherein said plant is produced by selective breeding.